AMENDMENTS

In the Claims:

Claims 1-23 (Canceled)

24. (Previously Presented) A device for separating large nucleic acid molecules from small nucleic acid molecules, wherein the large nucleic acid molecules exhibit a first radius of gyration, the device comprising:

a plurality of alternating constricted and unconstricted regions forming a channel and having the nucleic acid molecules disposed therein;

the unconstricted regions having a transverse dimension equal to or greater than the first radius of gyration, and length sufficient to allow the large nucleic acid molecules to attain their equilibrium shape as they move through the channel in response to a driving force; and

the constricted regions having a transverse dimension substantially smaller than the first radius of gyration, to influence the shape of the nucleic acid molecules moving through the channels.

25. (Previously Presented) The device of claim 24, wherein the constricted regions provide a trapping point adjacent an unconstricted region, and wherein the larger molecules have a wider contact area at the trapping point of the constricted regions, and thus have a higher probability of escaping the unconstricted region through a constricted region than the smaller molecules.

26. (Previously Presented) The device of claim 24, wherein the nucleic acid molecules in the unconstricted regions are in a relaxed state, and are entropically hindered from entering adjacent constricted regions in the channel.

27. (Original) The device of claim 24, and further comprising a substrate supporting the channel.

28. (Previously Presented) The device of claim 24, wherein the constricted regions are nanofluidic, and the unconstricted regions are obstacle free.

29. (Canceled).

30. (Previously Presented) The device of claim 24, wherein both the large and small molecules are deformed from their equilibrium states to enter the constricted region.

31. (Previously Presented) The device of claim 24, wherein the equilibrium shape of the large molecules is influenced by the constricted region to a greater extent than the equilibrium shape of the smaller molecules.

32. (Previously Presented) A device for separating large nucleic acid molecules from small nucleic acid molecules, the device comprising:

a plurality of alternating constricted and unconstricted regions forming a channel and having the nucleic acid molecules disposed therein;

the unconstricted regions having a depth and length sufficient to allow large nucleic acid molecules to attain their first radius of gyration as they move through the channel in response to a driving force;

the constricted regions having a depth substantially less than a radius of gyration of smaller nucleic acid molecules; and

means for applying force to the nucleic acid molecules in the channel.

33. (Previously Presented) The device of claim 32, wherein the constricted regions provide a trapping point adjacent an unconstricted region, and wherein the large nucleic acid molecules have a wider contact area at the trapping point of the constricted regions, and thus have a higher probability of escaping the unconstricted region through a constricted region than the smaller nucleic acid molecules.

34. (Previously Presented) The device of claim 32, wherein the nucleic acid molecules in the unconstricted regions are in a relaxed state, and are entropically hindered from entering adjacent constricted regions in the channel.

35. (Original) The device of claim 32, and further comprising a substrate supporting the channel.

36. (Previously Presented) The device of claim 32, wherein the constricted regions are nanofluidic, and the unconstricted regions are obstacle free.

37. (Previously Presented) The device of claim 32, wherein the small nucleic acids molecules exhibit an equilibrium spherical shape having a radius of gyration, and wherein the constricted region has a transverse dimension less than such radius of gyration.

38. (Previously Presented) The device of claim 32, wherein both the large and small molecules are deformed from their equilibrium states to enter the constricted region.

39 – 56 Canceled.